

# NANO-PATTERNS IN TETHERED MEMBRANES OF WEAKLY CHARGED CHAINS WITH HYDROPHOBIC BACKBONES

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## RESULTS

Our simple model shows that weakly-charged tethered-membranes or thin gels adsorbed on surfaces with hydrophobic backbone can undergo transitions from a swollen state to a nanophase segregated state as the strength of the backbone attraction increases.

Furthermore, as the concentration of salt increases, the nanophase segregated system undergoes a transition to a macrophase segregated state, and meanwhile the ionic nanoparticles inside the membrane will be expelled to the surrounding medium.

All these transitions are accompanied with large changes in the dimensions of the system. In the nanophase segregated state, we find that the local ionic density fluctuations are large. These fluctuations might account for the formation of percolated nanodomains rather than periodic nanophases. The release of nanoparticles (or molecules) from the polymer gel at different external conditions, makes these systems ideal vehicles for delivery of charged nanoparticles.

